

Grade 9 Science – Unit 2 – Electricity – Laboratory 1

Pop Can Race

Introduction

Charge separation causes objects to interact in different ways.

Problem

You have entered the Annual FSS Pop Can Race. You must roll an empty pop can the length of a hallway (approximately 25 m) **WITHOUT** touching the can. You are given a variety of materials that may help you. How can you move the can and win the race?

Materials

- ? Empty pop can
- ? Inflated balloon(s)
- ? Wool, fur, your sweater, your hair
- ? Styrofoam plate
- ? Plastic bags or plastic wrap
- ? Ebony rod and glass rod
- ? Stop watch or watch with stop watch capabilities
- ? Measuring tape

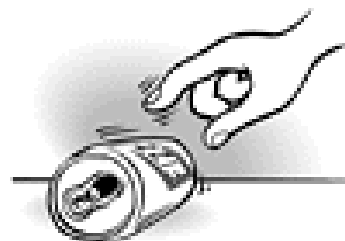
Instructions

Pre-Race

1. In a team of three classmates, discuss ways to move the pop can down the “race track” **WITHOUT** touching the can. You can use any of the materials in the list. **REMEMBER** – You cannot touch your pop can with any material at any time during the race. Likewise, you cannot interfere with another team’s can. If these two rules are violated, your team is disqualified.
2. Test your racing plans and adjust as required. Write down any observations and provide some scientific thought into your notes (e.g., Why does the can roll in a certain direction?). Also, record any changes you make to your original plan and write down your reasons for the change(s).

Race

1. Put one (1) empty pop can on its side on the floor at the race start line. Hold you can with one finger until it stays still.
2. Measure 25 m for a race track.
3. Put your race plans into action.



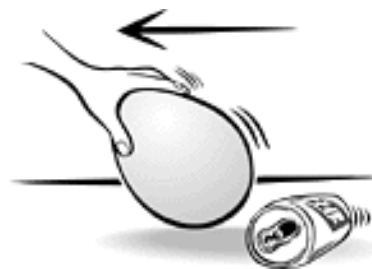
4. Write down the results of your race including the time to complete the race, observations, your thoughts about the effectiveness of your race plans (e.g., Did the can roll in a straight line?) and any changes to your plans.
5. Write down a statement about your team's race plans. If your can moved successfully, provide your reasons, including scientific thought, for the movement. Likewise in the event a no movement, provide your thoughts, including scientific reasons, for the failure of your plans.

Summary Questions

1. Was your hypothesis about the pop can moving correct? Explain
2. Evaluate your team's race plans. Is there anything you would change to improve your plans?
3. What did you discover or learn about electricity from the Pop Can Race?

ONE IDEA

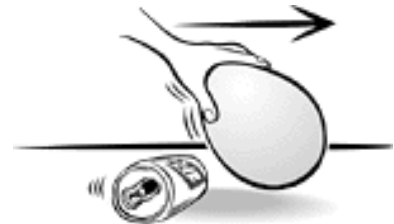
Rub the balloon back and forth on your hair really fast.



Hold the balloon about an inch in front of the can. The can will start to roll, even though you're not touching it!



Move the balloon away from the can -- slowly -- and the can will follow the balloon.



Questions

- ? How fast did your can move?
- ? How far do you think it will roll before it stops rolling?
- ? Will the pop can roll uphill?